A call system for cervical cancer screening in the Netherlands organised on the basis of general practice

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Objectives: Does a general practice-based call system for cervical cancer screening achieve a higher attendance of women eligible for screening, compared to the Dutch national call system?
Methods: Cohort study in general practice/ public health region in the eastern part of the Netherlands. Women registered in ten general practices received an invitation for cervical cancer screening from their general practitioner. A control group was invited by the Local Health Authority (national call system). The controls were group-matched on urbanisation. Subjects: 5,173 women were invited by their general practitioner (intervention group) and 32,099 were invited by the Local Health Authority (control group).
Results: The overall attendance rate in the intervention group was 55% (rural areas 56%, urban areas 54%) compared to 43% in the control group (rural areas 48%, urban areas 39%). For all age groups and during each year of the study, the attendance rate in the intervention group was higher.
A reminder by the general practitioner to women not responding to the initial invitation increased the attendance rate by an additional 9%.
Conclusions: The general practice-based call system for cervical cancer screening resulted in a higher attendance rate than the national call system. Therefore, a general practice-based call system is preferable to an invitation from the Local Health Authority and should be considered in organising the screening for cervical cancer. The model is a promising option for implementation in routine practice in the Netherlands and elsewhere.
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Introduction

Cervical cancer screening programmes have been shown to be effective in several countries.[1-5] However, these studies also identified the necessity for an organised programme of cervical cancer screening to ensure high coverage of the target population and adequate follow-up of cytological abnormalities. The current question is not whether cervical screening should or should not be performed but how a programme can be most effectively organised.

A nationwide screening programme for cervical cancer was started in the Netherlands in 1989. As in the UK, the general practitioner (GP) is involved in cervical cancer screening. The programme is set up in the following way:
- every three years, all women aged 35-54 years are invited for a cervical smear;
- the municipal population registers are used to determine the women to be invited;
- the women receive an invitation by letter from the Local Health Authority to make an appointment with their GP;
- the GP takes the smear.

The chosen setup of the programme has a number of shortcomings. The first concerns the attendance rate. Because different authorities invite the women and take the smears, major problems arise in monitoring compliance and sending reminders. Also, attendance rates of 40% to 50% for this nationwide screening programme are disappointing.

Another shortcoming of the setup is the difficulty in excluding women who have had a total hysterectomy or recent smear from being invited for screening. In order to exclude these women, Local Health Authorities would need information from the GPs and/or the cytological laboratories.

These shortcomings were the reasons for an intervention project in which the GP would be involved in the invitation part of the screening programme. In the Netherlands general practices have a defined patient population which enables the selection of patients by sex and age from the practice list. In the absence of a central national register that provides information on patients listed with practices, such a system can only be set up within individual practices.

In this intervention project, ten general practices established a structured call system and monitoring system for cervical cancer screening within the practice. The aim of the study was to determine whether a general practice-based call system can achieve a higher compliance with this screening programme compared to the national screening programme. Preliminary results of this study showed a 10% to 15% higher attendance rate for the screening without reminder and a 20% to 25% higher attendance with reminder compared to the national call system.[6] In this paper, the results of the total study period 1990-1992 are presented.

Methods

Selection of the practices

General practices in the region of Nijmegen with a computerised register allowing sorting by age and sex and which sent the smears to the regional screening laboratory were eligible for the introduction of a general practice-based call system. The computerised age-sex register was necessary to select the women aged 35 to 54. At the start of the project only eleven practices fulfilled these criteria. Ten were willing to participate in the project.

Selection of women for screening

The municipal population registers were the source for identification of the women due for screening, that is, women aged 35 to 54 years. The ten GPs with the call system sent lists of women they were going to invite for screening (intervention group) to the researchers. The researchers matched the practice lists with the list drawn from the population registers. Women who were listed at participating practices were removed from the list of the population register; the remaining women received an invitation from the Local Health Authority (control group).

Urban and rural practices

The screening in the region of Nijmegen during the pilot project (1976-1985) showed a lower response rate in urban communities compared to rural areas;[8] therefore, the controls were group-matched on urbanisation. Three of the participating practices in the intervention group were situated in an urban community. For these general practices, a control group was defined as all women from the same city who were invited by the national call system. The other seven general practices in the intervention group were situated in rural areas. For these practices, a control group was selected from comparable rural communities invited by the national call system.

The general practice-based call system

The women of the ten participating practices were invited for cervical cancer screening by a personal letter from their own general practitioner. Women were excluded from being invited by their GP in case of (a) a recent cervical smear (within one year); (b) total hysterectomy; (c) being under follow-up for previous cytological abnormalities; (d) personal circumstances, contraindicating an invitation for screening. Six of the general practices also sent reminders to invited women who failed to contact the practice. After four weeks the non-responders received a second letter. At the start of the project some practices reminded women by phone. Because of the increased workload, however, they soon switched to a written reminder.

Analysis

Data on total numbers of invited women were gathered from the practice lists (intervention group) and the population register (control group). Data on attendance were gathered from the laboratories where the GPs sent their cervical smears. The registers of the cytological laboratories recorded the reason why smears were taken (for preventive or medical reasons). This way, it was possible to gather data on preventive smears taken from both the intervention and control groups. A women was defined as an attender if a preventive smear was registered in the year of invitation or in the first three months of the following year.

The attendance rate from the general practice-based call system was compared to the attendance rate from the national call system in the control group. In the intervention group only the eligible women were invited, but in the control group it was not possible to exclude women from being invited for medical reasons.

To enable a comparison between the intervention group and the control group, the attendance rates in both groups were calculated for all identified women. So in this comparison the women excluded for medical reasons in the intervention group were regarded as non-attenders.

Owing to a possible effect of age on the attendance, age specific attendance rates for the intervention and control groups are compared. Also, the homogeneity of the results was examined over the different age groups by stratification on age.

Results

Invitation

In the intervention group 5,173 women were identified for screening in the period 1990-1992; 3,621 came from rural practices and 1,552 from urban practices. Of these women, 18% were not invited for medical reasons: 11% because of a recent smear or follow-up for previous cytological abnormalities and 7% because of total hysterectomy. These percentages were the same for each year of the project (table 1). As a consequence, 4,246 women from the intervention

Table 1. Identification of women non-eligible for a cervical smear test in the intervention group.

Year of invitation	Number of women	Recent smear taken or in follow up		Total hysterectomy		Total non-eligible	
		N	%	N	%	N	%
1990	1,490	161	11%	100	7%	261	18%
1991	1,870	214	11%	138	7%	352	18%
1992	1,813	193	11%	121	7%	314	18%
Total	5,173	568	11%	359	7%	927	18%

group were invited. In the control group, 32,099 women were identified and invited by the national call system: 18,543 from an urban area and 13,556 from a rural area.

Attendance rate

The overall attendance in the intervention group was 55% compared to 43% in the control group. In the rural region the attendance was 56% compared to 48%, and in the urban region, 54% compared to 39%, respectively. In each year of the study this difference was significant for both the rural and the urban regions (table 2).

When analysed according to age, the attendance rate in the intervention group was higher than in the control group for each age. This was true for both the urban and the rural areas (table 3).

In six of the intervention practices, the non-responders received a reminder. After the initial invitation, the attendance rate in these practices was 55%. The reminder increased the attendance to 64%; as a result, the overall attendance rates for these practices was 21% higher than for the control group (table 4).

Discussion

The aim of this study was to assess the effects of a practice-based call system on the attendance of women in a screening programme for cervical cancer. The attendance was higher for the general practice-based call system than for the national call system and, after a reminder, the response rate increased further. The six general practices which also sent reminders had a 21% higher attendance than the national call system. The attendance in the control group corresponds with the disappointing attendance in the national screening programme in the Netherlands.

Since the criterion for participating in the general practice-based call system was computerisation, selection could have resulted in bias. The 'early computerised' practices might have had more screening activities; therefore their patients might be more likely to participate because they are accustomed to these activities. However, a regional survey showed no relation between 'computerisation' and 'screening activities within the practice' and 'attitude to screening programmes/activities'.[7] Also management style of 'early computerised' practices might cause a certain type of patient to choose these practices, thereby affecting the compliance to screening. In urban areas this might be the case. In rural areas however, patients usually choose the closest practice, since the distances between practices are greater. The possible selection based upon management style and attitude towards screening is more likely to show

Table 2. Attendance rates and 95 per cent confidence intervals (CI) from general practices (exclusive reminder) and control groups.

	General practices				Control groups			
	N	Attendance			N	Attendance		
		No	%	95%CI		No	%	95%CI
Urban								
1990	516	282	55%	[51;59]	6,232	2,552	41%	[40;42]
1991	530	297	56%	[52;60]	6,068	2,355	39%	[38;40]
1992	506	260	51%	[47;55]	6,243	2,376	38%	[37;39]
1990-1992	1,552	839	54%	[52;56]	18,543	7,283	39%	[38;40]
Rural								
1990	974	566	58%	[55;61]	4,154	2,056	49%	[47;51]
1991	1,340	751	56%	[53;59]	4,854	2,284	47%	[45;49]
1992	1,307	706	54%	[51;57]	4,548	2,184	48%	[46;60]
1990-1992	3,621	2,023	56%	[54;58]	13,556	6,524	48%	[47;49]
Total	5,173	2,862	55%	[54;56]	32,099	13,807	43%	[42;44]

biased compliance to the reminder rather than the first invitation, because compliance to the reminder primarily reflects a more personal approach.

The first twenty years of cervical screening in the UK have had a limited effect.[9,10] The main problem with the programmes was the low coverage.[11-13] In an effort to improve organisation of cervical cancer screening in the UK, all health authorities were instructed to introduce a cervical cytology call and recall system in 1988. Since the change in payment to general practitioners for cervical screening in the UK, screening activities have increased significantly. The 1990 General Practitioner Contract sets targets on which payment for cervical screening depends. Payments are triggered on reaching 50% to 80% of the target population. Coverage of the target population between 1989/90 and 1992/93 increased from 61% to 83%.[14]

Well-organised screening programmes in Scandinavia showed that a 70% attendance rate can be achieved.[1,2] The results of the intervention group of our study approach this figure.

An important question is whether women with a higher risk of cervical cancer participate in screening. Results from pilot screening programmes showed that more cervical abnormalities were found in smears taken from women who attended after a reminder.[15] This implies that, with a reminder, more women in the high-risk group are being reached. Possibly, these women need an extra push to attend a screening; the personal letter from their GP or a reminder may provide such an incentive. In addition to a higher compliance with the screening - and thereby greater effectiveness of the screening programme the general practice-based call system has another important advantage. The GP can exclude women from being invited for medical reasons. This not only reduces the number of unnecessary smears but also needless 'emotional pain' and irritation for the women who have had a hysterectomy. This study showed that exclusion for medical reasons involves a substantial number of women; in the participating practices, 18% did not need a screening test. Since there is no central registration by which women can be selected according to the GP with whom they are registered, a general practice-based call system can only be set up within individual practices. We conclude that a general practice-based call system is preferable to an invitation from the

Table 3. Age-specific attendance rates for the general practices and control group.

Age	Practices N	Practices attendance No	Practices attendance %	Control group N	Control group attendance No	Control group attendance %
Urban						
53	88	40	45	2,095	688	33
50	113	46	41	2,097	787	38
47	126	64	51	2,311	839	36
44	237	111	47	2,909	1,158	40
41	274	157	57	2,868	1,214	42
38	316	184	58	3,059	1,298	42
35	398	237	60	3,204	1,299	41
total	1,552	839	54	18,543	7,283	39
Rural						
53	379	192	51	1,367	556	41
50	482	251	52	1,595	687	43
47	492	251	51	1,701	754	44
44	646	373	58	2,303	1,138	49
41	549	315	57	1,932	966	50
38	572	340	59	2,248	1,152	51
35	501	301	60	2,410	1,271	53
total	3,621	2,023	56	13,556	6,524	48

Local Health Authority. But it is another question whether this system can be introduced on a larger scale. A condition for inclusion in the study was computerisation of the general practices. At the start of this study only about 10% of practices were computerised. But during the study period, this increased to 48% in 1993 and 80% in 1994, in accord with rising automation rates in the Netherlands. A survey conducted of all GPs in the region showed that the large majority of them (91%) were willing to participate in some way in a general practice-based call system.[7] Currently, the call system has been introduced on a large scale in the region.

The incidence of cervical cancer is relatively low, but it is a serious health problem. Well-organised screening programmes can reduce the incidence of cancer of the cervix and the mortality rate by 50 to 60%.[1,3-5]

The main problems in national screening programmes for cervical cancer are identifying women at risk, compliance, and the number of opportunistic and unnecessary smears.[13,16,17] The general practice based-call system in this

Table 4. Attendance rates and 95 per cent confidence intervals (CI) from six general practices before and after a reminder.

	N	Attendance first invitation No.	%	95%CI	Attendance after reminder No	%	95%CI
1990	574	334	58%	[54;62]	402	70%	[66;74]
1991	1,243	684	55%	[52;58]	780	63%	[60;66]
1992	1,065	580	54%	[51;57]	661	62%	[59;65]
1990-1992	2,882	1,598	55%	[53;56]	1,843	64%	[62;66]

study demonstrated the possibility of increasing participation and at the same time excluding women for whom a smear was not relevant. This may contribute to a more effective and efficient allocation of screening resources. In our view, this study demonstrates the value of an approach to screening for cervical cancer that combines the best of public health and individual health care. The model appears feasible on a larger scale in the Netherlands and in other countries where data from practice lists are available. ■

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